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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,341	12/12/2003	Ho-Seop Jeong	053933-5062	7455

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EXAMINER

NGUYEN, LINH THI

ART UNIT PAPER NUMBER

2627

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/733,341	<b>Applicant(s)</b> JEONG ET AL.	
	<b>Examiner</b> Linh T. Nguyen	<b>Art Unit</b> 2627	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Kawano (US Publication number 20030012090).

In regards to claims 1 and 7, AAPA discloses an optical pick-up device (Fig. 1), comprising: a system driving integrated circuit (IC) for providing a tracking control signal (Fig. 3, element 21), a focusing control signal and a tilting control signal to drive at least one actuator (Fig. 3, Vf and Vt to element 10); the actuator driven in response to a sum signal and a difference signal, associated with the focusing control signal and the tilting control signal, and the tracking control signal (Fig. 3). However, AAPA does not disclose an optical pickup with a current feedback unit for outputting, to corresponding coils of the actuators, voltages corresponding to the sum and difference signals generated by combining the focusing control signal and the tilting control signal and the tracking control signal, sensing currents applied to the actuator coils, and applying feedback signals to the actuator to control voltage sensitivity and phase of the actuator.

In the same field of endeavor, Kawano discloses an optical pickup device (Fig. 27) comprising: a current feedback unit (Fig. 29) for outputting, to corresponding coils of

the actuators (Fig. 29, focus and tilt error signal), voltages (Focus and Tilt Drive) corresponding to the sum and difference signals generated by combining the focusing control signal and the tilting control signal and the tracking control signal (Fig. 29), sensing currents applied to the actuator coils, and applying feedback signals to the actuator to control voltage sensitivity and phase of the actuator (Paragraph [0134]). At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine an optical pick-up device with a system driving integrated circuit of AAPA to have a current feedback unit as taught by Kawano. The motivation for doing so would have been to reduce the number of parts and adjust the pickup at a low cost and reduce the size of the whole pickup device (Paragraph [0138]).

In regards to claims 2 and 9, AAPA discloses an optical pickup device comprising: one-chip application specific integrated circuit (ASIC), and is mounted on a base surface of the optical pick-up device (Fig. 3, element 21). AAPA does not but Kawano discloses the optical pick-up device, wherein the current feedback unit (Fig. 29) is implemented to the IC chip of AAPA.

In regards to claims 3 and 10, AAPA does not but Kawano discloses the optical pick-up device, wherein the feedback signals generated by the current feedback unit are negative feedback signals (Fig. 29). The motivation is the same as claim 1 above.

In regards to claims 4 and 11, AAPA does not but Kawano discloses the optical

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pick-up device, wherein the current feedback unit comprises: a plurality of coil current sensors ( $I_r$  and  $I_l$ ) for sensing magnitudes of the currents corresponding to the voltages applied to the actuator (Fig. 29, focus and tilting drive); a plurality of current-feedback amplifiers (Fig. 41, shows amplifiers 1403, 1407 and 1408) after the optical sensor received a signal) for outputting the feedback signals for controlling the voltage sensitivity in response to the sensed coil currents (Fig. 29); operation amplifiers for outputting the sum signal and the difference signal associated with the focusing control signal and the tilting control signal (Fig. 29, focus and tilting error signal); a plurality of adders each outputting an actuator driving signal by adding an output of each operation amplifier to an output of each current-feedback amplifier (Fig. 29, add the  $F_l+F_r$  and  $F_l-F_r$  to the focus target value); and a plurality of amplifiers each amplifying the actuator driving (Fig. 41, element 1406) signal and outputting the amplified signal (Fig. 29,  $F_l+F_r$  and  $F_l-F_r$ ). The motivation is the same as claim 1 above.

In regards to claims 5 and 12, AAPA does not but Kawano the optical pick-up device, wherein each coil current sensor (Fig. 41, element 1301 and 1302) senses a coil current from a voltage at an end of a resistor connected to an actuator coil in serial (Fig. 41, R). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify AAPA optical pickup to have a resistor to connected to an actuator coil in serial as taught by Kawano. The motivation for doing so would have been to balance the current flow from the sensor to the actuator.

In regards to claim 6, AAPA discloses the optical pick-up device, wherein a resistance value of the resistor is 1 .OMEGA. (it is obvious that the resistor is approximately 1 omega because the coil transfer function  $G_c(s)$  has to be low, to increase the moving magnet type actuator).

In regards to claim 8, AAPA discloses the tilt actuator, wherein the actuator is a moving-magnet type actuator (Paragraph [0024]).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh T. Nguyen whose telephone number is 571-272-5513. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN  
November 20, 2006



WAYNE YOUNG  
SUPERVISORY PATENT EXAMINER